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BY

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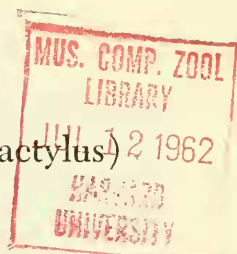
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# A New Species of Frog (Genus *Tomodactylus*) from Western México

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ROBERT G. WEBB

Thirteen specimens of frogs collected in the summers of 1960 and 1961 in the Mexican states of Durango and Sinaloa represent a heretofore unnamed species. The specimens have been deposited in the Museum of Natural History of the University of Kansas (KU) and in the Museum of Michigan State University (MSU). The species may be named and described as follows:

## *Tomodactylus saxatilis* new species

*Holotype*.—KU 63326 (Fig. 1); obtained eight miles west of El Palmito, Sinaloa, approximately 6100 feet, on 23 June 1961; original field number, 2354 of Robert G. Webb.

*Paratypes*.—A total of 12 specimens: KU 63327-33, same data as holotype, 23-25 June 1961; MSU 4085-88, two miles north of Pueblo Nuevo, Durango, approximately 6000 feet elevation, 24 July 1960; MSU 4089, one half mile west of Revolcaderos, Durango, approximately 6600 feet, 29 July 1961.

*Diagnosis*.—A species of *Tomodactylus* possessing the following combination of characters: (1) tips of two outer fingers truncate, about twice width of narrowest part of digit; (2) tympanum small, less than one half diameter of eye; (3) ventral surfaces smooth; (4) contrasting marbled pattern on back and top of head, and (5) venter whitish, lacking dark marks.

*Description of holotype*.—Adult male; snout-vent length, 31.5 (measurements are in millimeters and were taken by means of dial calipers reading to one tenth of a millimeter); width of head, 11.2; length of head, 10.3; horizontal diameter of eye, 3.1, and of tympanum, 1.2; distance from eye to nostril, 3.8; internarial width, 2.9; interorbital width, 4.1; width of eyelid, 2.5; lumbar gland (left side), 7.0 x 2.6; distance from axilla to groin, 15.2; tibial length, 12.7; length of foot, 13.1.

Head slightly wider than body; tip of snout rounded, slightly truncate; canthus rounded; tympanum small, less than one half diameter of eye; tympanum having posterior margin ill-defined, separated from eye by distance about equal to diameter of tympanum; diameter of eye slightly less than distance from eye to nostril; width of eyelid about two thirds interorbital width; paratoid gland indistinct; lumbar glands high, separated from insertion of leg by about one millimeter; back and sides of body having low, scarcely elevated pustules; top of head, limbs and venter smooth; few low, whitish pustules below and behind tympanum, and low on sides of body; posterior surface of thighs and anal region pustulate; one pair of whitish postanal spots; ventral disc attached near insertion of legs, lacking conspicuous transverse fold; skin loose on throat, chest and abdomen.

Digits not webbed; tips of two outer fingers truncate, having terminal transverse grooves, about twice width of narrowest part of digit; digits of first and second fingers slightly expanded; fingers from shortest to longest, 1-2-4-3, first only slightly shorter than second; three palmar tubercles; inner palmar tubercle about one third size of large median tubercle; outer tubercle about one tenth size of large median tubercle; four supernumerary palmar tubercles; tips of toes slightly wider than narrowest part of digits; toes from shortest to longest, 1-2-5-3-4, second only slightly shorter than fifth; inner metatarsal tubercle about four times size of small outer metatarsal tubercle; supernumerary tubercles on foot small; no tarsal fold; heels touching when tibiae adpressed to thighs; tibiotarsal articulation reaching eye when leg adpressed to side of body.

Contrasting marbled pattern on back and top of head; contrasting, mostly barred, pattern on limbs; ventral surfaces whitish, lacking dark marks, but having minute dark peppering; marbling of dorsal surfaces blackish and whitish in preservative.

Vomerine teeth lacking; internal choanae lateral, partly concealed by maxillaries; tongue smooth, elongate, shallowly notched distally, free for about half its length; vocal sac median; internal vocal slits large and near angle of jaw.

*Variation.*—Twelve males closely resemble the holotype. Two specimens from Pueblo Nuevo are soft and not well preserved. The ranges of variation (means in parentheses) for the 13 males comprising the type series are: snout-vent length, 25.5-31.5 (27.9); width of head, 9.7-11.2 (10.5); diameter of eye, 2.9-3.6 (3.2); horizontal diameter of tympanum, 1.1-1.8 (1.4); length of tibia, 11.1-13.1 (12.1); length of foot, 11.0-13.1 (12.1).

The pale ground color of the marbled pattern in most specimens is least extensive on the back and arms, but most extensive on the legs. The lumbar glands are slightly elevated and conspicuous, and in KU 63328 are extremely protuberant, or (KU 63330) evident on left side but flattened and indistinct on right side. The back is rough having low, scarcely elevated pustules, but becomes less rough anteriorly and most of the top of head is smooth. The three specimens from Pueblo Nuevo, Durango, differ slightly from the other specimens examined in lacking pairs of postanal white spots, and in having smooth backs (slightly pustulate in MSU 4088). The tibiotarsal articulation fails to reach the eye in KU 63330. The small inner palmar tubercle is continuous with the large median tubercle on the right hand of KU 63330, and lacking on both hands of KU 63329 and on the left hand of KU 63328. The tip of the tongue is entire in some specimens and in others has an irregular margin.

*Coloration of living specimens.*—Marbled pattern on back and top of head of dark brown to blackish on yellowish-gold; pattern slightly less contrasting on limbs than on back, consisting of brown to grayish on pale yellow; side of head and body grayish sometimes having pale yellow to whitish spots; iris blackish having fine reticulation of yellowish to greenish-gold; venter dirty white.

*Habitat.*—The three records of occurrence for *Tomodactylus saxatilis* are in a mixed boreal-tropical habitat, which is transitional between a pine-oak forest at higher elevations and a tropical decidu-

ous forest at lower elevations. The mixed boreal-tropical habitat is most conspicuous at elevations between approximately 7800 and 5500 feet on southerly exposed slopes of barrancas and arroyos of the dissected plateau of the Sierra Madre Occidental. The mixed boreal-tropical habitat occurs for approximately 30 miles along the paved highway (Mexican Highway 40) between Cd. Durango, Durango, and Mazatlán, Sinaloa. The records of occurrence in those states that are along this highway are separated by 14.5 miles (*via road*).



FIG. 1. *Tomodactylus saxatilis* new species, adult male, KU 63326, holotype ( $\times 2$ ), dorsal view.

The terrain consists of occasional level areas, but is mostly of steep hillsides. Dominant trees are large oaks and pines; a characteristic pine is the sad or drooping-needle pine, locally called "pino triste." The vegetational cover is usually open, including grasses, small oaks and pines, broad-leaved shrubs and herbs, prickly pears, magueys, thorny acacias, bracken fern, and epiphytes in trees. Ferns occur in moist protected places, and orchids are occasional, sometimes in trees.

Outcrops of rock, boulder-strewn areas, and occasional rock slides (talus) also characterize the terrain. *Tomodactylus saxatilis* seems to be restricted to rocky habitats. The individuals collected were detected when they called at night from within crevices of rocks or from exposed perches on rocks and boulders; some calling frogs were out of reach on steep rock walls. The call is a single, loud, high peep.

*Comparisons.*—Dixon (1957) recognized six species of *Tomodactylus* (*nitidus*, *dilatus*, *albolabris*, *angustidigitum*, *fuscus* and *grandis*) in his revision of the genus. Another species (*rufescens*) was subsequently described by Duellman and Dixon (1959). *Tomodactylus saxatilis* differs from all the species named immediately above by the combination of characters given in the diagnosis. *Tomodactylus saxatilis* differs from *nitidus*, *angustidigitum* and *grandis* in having the tips of the two outer fingers widened and truncate; *saxatilis* differs from *dilatus*, *albolabris*, *fuscus* and *rufescens* in having a smooth venter (not pustulate), a contrasting pale and dark marbled pattern on the back, and a lack of "flash" colors on the femora.

*Tomodactylus saxatilis*, having lumbar glands, also resembles three species referred to the genus *Syrrhophus*. *Tomodactylus macrotympanum* was described by Taylor (1940:496, 497) as having a large, moderately distinct lumbar gland; the species was referred to the genus *Syrrhophus* by Dixon (*op. cit.*:384). According to Firschein (1954:55), *Syrrhophus smithi* and *S. petrophilus* have elongate lumbar glands shaped like those in *Tomodactylus*. *Tomodactylus saxatilis* resembles *macrotympanum*, *smithi* and *petrophilus* more than it does other species; all four attain large maximal sizes, and have lumbar glands, mostly smooth ventral surfaces, three palmar tubercles (sometimes absent in *saxatilis*), and usually contrasting dorsal patterns (reduced to flecks and spots in all species except *saxatilis*). *Tomodactylus saxatilis* differs from *macrotympanum* in having an extensive marbled dorsal pattern and a small tympanum, and differs from *smithi* and *petrophilus* in having a marbled dorsal pattern and the tips of the outer two fingers widened and truncate. *Tomodactylus saxatilis* differs from all other named species of *Syrrhophus* in having conspicuous lumbar glands and in lacking inguinal glands.

*Remarks.*—The characteristics delimiting the genera *Tomodactylus* and *Syrrhophus* are not agreed upon by all workers (see discussions by Firschein, 1954:50; Langebartel and Shannon, 1956:164; and Dixon, 1957:383). I have referred *saxatilis* to the genus *Tomodactylus* on the basis of a lumbar gland, which was considered a distinguishing character for the genus by Smith and Taylor (1948:46) and Langebartel and Shannon (1956:165). Lumbar glands are longer than broad, at least one third the distance from axilla to groin, lateral and usually high, and often conspicuous and protuberant. The elevation or flatness of the lumbar glands seems to be due to individual variation; living specimens in the field had conspicuous and protuberant, or non-elevated, indistinct lumbar glands. Lumbar glands are not to be confused with inguinal glands,



which are roundish, often yellowish, sometimes diffuse, lateral but low, often inconspicuous, and usually not protuberant. Inguinal glands occur in the genus *Microbatrachylus* and in some species of *Eleutherodactylus*, and have been described as flat, or low, or small, or indistinct for most species of *Syrrhophus*.

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